0068756

SAF-RC-030
Remaining Sites Confirmation Sampling - Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 MJP 02/13/06
INITIAL/DATE

COMMENTS:

SDG K0096 **SAF-RC-030**

Waste Site: 100-D-50:9

Date: 2 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite is 100-D-50:9
Subject: Inorganics - Data Package No. K0096-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0096 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Note
J10FJ2	11/7/05	Solid	C	See note 1
J10FH7	11/7/05	Solid	C	See note 1
J10FH8	11/7/05	Solid	C	See note 1
J10FH9	11/7/05	Solid	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.
Due to an LCS recovery outside QC limits (42.7%), all silicon results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (49.5%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (108%), all boron results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (33%), all chromium results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. K0096 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to an LCS recovery outside QC limits (42.7%), all silicon results were qualified as estimates and flagged "J".
- Due to a matrix spike recovery outside QC limits (49.5%), all antimony results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (108%), all boron results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (33%), all chromium results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0096	REVIEWER:	Project: 100-D-50:9	PAGE: 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron Chromium	J	All	RPD
Silicon	J	All	LCS recovery
Antimony	J	All	MS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD									
Lab: LLI	SDG: K0096								
Sample Number		J10FJ2		J10FH7		J10FH8		J10FH9	
Remarks									
Sample Date		11/7/05		11/7/05		11/7/05		11/7/05	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.85	U	2.2		2.6		0.82	U
Aluminum		5040		6580		6160		5440	
Arsenic	10	2.1	U	2.7		4.2		2.0	U
Boron		12.1	J	2.8	J	2.8	J	1.6	UJ
Barium	2	71.4		485		512		63.8	
Beryllium		0.06	U	0.14		0.16		0.06	U
Calcium		6240		14300		22100		5400	
Cadmium	0.2	0.43	U	2.8		3.6		0.41	U
Cobalt		7.1		8.0		7.1		6.2	
Chromium	1	13.4	J	52.2	J	54.2	J	8.0	J
Copper		17.6		123		117		12.8	
Iron		19600		30200		29400		17500	
Mercury	0.2	0.22		5.7		7.5		0.02	U
Potassium		1100		1230		1160		1140	
Magnesium		3930		4920		4400		3770	
Manganese		298		386		372		290	
Molybdenum		1.0		2.5		2.2		0.76	U
Sodium		176		217		226		164	
Nickel		9.7		30.5		21.7		8.5	
Lead	5	16.3		160		160		6.0	
Antimony		2.4	UJ	2.9	J	2.6	J	2.3	UJ
Selenium	1	2.2	U	2.5	U	3.1		2.1	UJ
Silicon		352	J	744	J	845	J	503	J
Vanadium		45.9		34.7		33.5		38.2	
Zinc	1	71.1		1560		1770		38.2	

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Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10FJ2	Silver, Total	0.85 u	MG/KG	0.85	6.0
		Aluminum, Total	5040	MG/KG	9.3	3.0
		Arsenic, Total	2.1 u	MG/KG	2.1	6.0
		Boron, Total	12.1 J	MG/KG	1.6	6.0
		Barium, Total	71.4	MG/KG	0.12	6.0
		Beryllium, Total	0.06 u	MG/KG	0.06	3.0
		Calcium, Total	6240	MG/KG	7.3	6.0
		Cadmium, Total	0.43 u	MG/KG	0.43	6.0
		Cobalt, Total	7.1	MG/KG	0.73	6.0
		Chromium, Total	13.4 J	MG/KG	0.98	6.0
		Copper, Total	17.6	MG/KG	0.88	3.0
		Iron, Total	19600	MG/KG	19.6	6.0
		Mercury, Total	0.22	MG/KG	0.02	1.0
		Potassium, Total	1100	MG/KG	33.8	6.0
		Magnesium, Total	3930	MG/KG	8.2	6.0
		Manganese, Total	298	MG/KG	0.12	6.0
		Molybdenum, Total	1.0	MG/KG	0.79	6.0
		Sodium, Total	176	MG/KG	1.0	6.0
		Nickel, Total	9.7	MG/KG	0.79	6.0
		Lead, Total	16.3	MG/KG	1.9	6.0
		Antimony, Total	2.4 u J	MG/KG	2.4	6.0
		Selenium, Total	2.2 u J	MG/KG	2.2	6.0
		Silicon, Total	352 J	MG/KG	5.0	6.0
		Vanadium, Total	45.9	MG/KG	0.55	6.0
		Zinc, Total	71.1	MG/KG	0.30	6.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J10FH7	Silver, Total	2.2		MG/KG	0.96	6.0
		Aluminum, Total	6580		MG/KG	10.4	3.0
		Arsenic, Total	2.7		MG/KG	2.3	6.0
		Boron, Total	2.8	J	MG/KG	1.8	6.0
		Barium, Total	485		MG/KG	0.14	6.0
		Beryllium, Total	0.14		MG/KG	0.07	3.0
		Calcium, Total	14300		MG/KG	8.1	6.0
		Cadmium, Total	2.8		MG/KG	0.48	6.0
		Cobalt, Total	8.0		MG/KG	0.82	6.0
		Chromium, Total	52.2	J	MG/KG	1.1	6.0
		Copper, Total	123		MG/KG	0.99	3.0
		Iron, Total	30200		MG/KG	22.0	6.0
		Mercury, Total	5.7		MG/KG	0.11	6.0
		Potassium, Total	1230		MG/KG	37.9	6.0
		Magnesium, Total	4920		MG/KG	9.2	6.0
		Manganese, Total	386		MG/KG	0.14	6.0
		Molybdenum, Total	2.5		MG/KG	0.89	6.0
		Sodium, Total	217		MG/KG	1.2	6.0
		Nickel, Total	30.5		MG/KG	0.89	6.0
		Lead, Total	160		MG/KG	2.1	6.0
		Antimony, Total	2.9	J	MG/KG	2.7	6.0
		Selenium, Total	2.5	u	MG/KG	2.5	6.0
		Silicon, Total	744	J	MG/KG	5.6	6.0
		Vanadium, Total	34.7		MG/KG	0.62	6.0
		Zinc, Total	1560		MG/KG	0.34	6.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J10FH8	Silver, Total	2.6		MG/KG	0.90	6.0
		Aluminum, Total	6160		MG/KG	9.8	3.0
		Arsenic, Total	4.2		MG/KG	2.2	6.0
		Boron, Total	2.8	J	MG/KG	1.7	6.0
		Barium, Total	512		MG/KG	0.13	6.0
		Beryllium, Total	0.16		MG/KG	0.06	3.0
		Calcium, Total	22100		MG/KG	7.6	6.0
		Cadmium, Total	3.6		MG/KG	0.45	6.0
		Cobalt, Total	7.1		MG/KG	0.77	6.0
		Chromium, Total	54.2	J	MG/KG	1.0	6.0
		Copper, Total	117		MG/KG	0.93	3.0
		Iron, Total	29400		MG/KG	20.6	6.0
		Mercury, Total	7.5		MG/KG	0.1	6.0
		Potassium, Total	1160		MG/KG	35.5	6.0
		Magnesium, Total	4400		MG/KG	8.6	6.0
		Manganese, Total	372		MG/KG	0.13	6.0
		Molybdenum, Total	2.2		MG/KG	0.83	6.0
		Sodium, Total	226		MG/KG	1.1	6.0
		Nickel, Total	21.7		MG/KG	0.83	6.0
		Lead, Total	160		MG/KG	2.0	6.0
		Antimony, Total	2.6	J	MG/KG	2.6	6.0
		Selenium, Total	3.1		MG/KG	2.3	6.0
		Silicon, Total	845	J	MG/KG	5.2	6.0
		Vanadium, Total	33.5		MG/KG	0.58	6.0
		Zinc, Total	1770		MG/KG	0.32	6.0

1/31/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J10FH9	Silver, Total	0.82	u	MG/KG	0.82	6.0
		Aluminum, Total	5440		MG/KG	8.9	3.0
		Arsenic, Total	2.0	u	MG/KG	2.0	6.0
		Boron, Total	1.6	u J	MG/KG	1.6	6.0
		Barium, Total	63.8		MG/KG	0.12	6.0
		Beryllium, Total	0.06	u	MG/KG	0.06	3.0
		Calcium, Total	5400		MG/KG	7.0	6.0
		Cadmium, Total	0.41	u	MG/KG	0.41	6.0
		Cobalt, Total	6.2		MG/KG	0.70	6.0
		Chromium, Total	8.0	J	MG/KG	0.94	6.0
		Copper, Total	12.8		MG/KG	0.85	3.0
		Iron, Total	17500		MG/KG	18.8	6.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Potassium, Total	1140		MG/KG	32.5	6.0
		Magnesium, Total	3770		MG/KG	7.9	6.0
		Manganese, Total	290		MG/KG	0.12	6.0
		Molybdenum, Total	0.76	u	MG/KG	0.76	6.0
		Sodium, Total	164		MG/KG	1.0	6.0
		Nickel, Total	8.5		MG/KG	0.76	6.0
		Lead, Total	6.0		MG/KG	1.8	6.0
		Antimony, Total	2.3	u J	MG/KG	2.3	6.0
		Selenium, Total	2.1	u	MG/KG	2.1	6.0
		Silicon, Total	503	J	MG/KG	4.8	6.0
		Vanadium, Total	38.2		MG/KG	0.53	6.0
		Zinc, Total	38.2		MG/KG	0.29	6.0

1/31/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030
LVL#: 0511L671
SDG/SAF#: K0096/RC-030

W.O.#: 11343-606-001-9999-00
Date Received: 11-09-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 solid samples.

2. The sample were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were reported with 6-fold dilutions for ICP metals due to high concentrations and sample matrix. The samples were rerun with 3-fold dilutions on a different instrument due to sample matrix. Samples J10FH7 and J10FH8 were rerun for Mercury with 6-fold dilutions due to high concentrations.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 42.7%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

10. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial

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dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J10FJ2	Aluminum	72,000	96.1
	Iron	60,000	92.8
	Antimony	600	101.1

12. The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/22/05
Date

jjw/m11-671

Washington Closure Hanford | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | RC-030-020 | Page 1 of 4

Collector STANKOVICH/HUDSON	**Company Contact** Mike Stankovich	**Telephone No.** 531-7620	**Project Coordinator** KESSNER, JH	**Price Code** 9C	**Data Turnaround** 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	**Sampling Location** 100-D-50:9		**SAF No.** RC-030	**Air Quality** ☐	
Ice Chest No. AFS-04-120	**Field Logbook No.** EL-1578	**COA** C10DR16700	**Method of Shipment** FedEx		
Shipped To EBERLINE SERVICES / LIONVILLE	**Offsite Property No.** A060108		**Bill of Lading/Air Bill No.** See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
Non Rad

Special Handling and/or Storage
Cool 4°C

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)		1	1	1	1	1					
Volume	500mL	120mL	60mL	60mL	60mL	250mL					
SAMPLE ANALYSIS	See Item (1) in Special Instructions	See Item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; [redacted]	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (TEH) - 418.1					

810018

Sample No.	Matrix *	Sample Date	Sample Time									
J10FH7	OTHER SOLID	11/7/05	0820		X	X		X				
J10FH8	OTHER SOLID	11/7/05	0820		X	X		X				
J10FH9	OTHER SOLID	11/7/05	0930		X	X		X				
~~J10EJ0~~	~~OTHER SOLID~~	NA 11/20/05										
~~J10EJ1~~	~~OTHER SOLID~~	11/20/05										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Mike Stankovich	11/7/05 1330	M 3728/2C	11/7/05 1330
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Ref 2C	11/8/05 1000	DS Shipping	11/8/05 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Shipping WCH	11/8/05 1000	Fed EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed EX	11/9/05 0985	[illegible]	11-9-05 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium
(2) ICP Metals - 6010A (SW-846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0000021

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 2 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9		SAF No. RC-030		
Ice Chest No. ERL-01-027	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES (LIVERMORE)	Offsite Property No. A060109		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

0000019

SAMPLE ANALYSIS											
Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)	1	1	1	1	1	1				
Volume	500mL	120mL	60mL	60mL	60mL	250mL				
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
J10FJ2	OTHER SOLID	11/7/05	1200	X	X		X	X			
~~J10FJ3~~	~~OTHER SOLID~~	BH 11/7/05									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From BILL HUDSON/BHudson	Date/Time 11/7/05 1700	Received By/Stored In 3728 BLDG 2B	Date/Time 1700 11/7/05
Relinquished By/Removed From 3728 Rec 2B	Date/Time 11/8/05 1230	Received By/Stored In B.J. Johnson	Date/Time 11/8/05 1230
Relinquished By/Removed From B.J. Johnson/Weed	Date/Time 11/8/05 1230	Received By/Stored In FedEx	Date/Time
Relinquished By/Removed From FedEx	Date/Time 11/9/05 0935	Received By/Stored In [signature]	Date/Time 11/9/05 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 – Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium

(2) ICP Metals - 6010A (SW-846) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

Matrix *
S=Soil
SD=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0000020

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-50:9			DATA PACKAGE: K0096		
VALIDATOR: TLT		LAB: LGT		DATE: 1/20/06	
			SDG: K0096		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J10FJ2 J10FH7 J10FH8 J10FH9					
					Solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: ~~Selenium~~ – DJ dil reanalyzed 1/31/05 no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: antimony – J all MS no FB

Silicon – J all LCS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	No	N/A
Duplicate results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	Yes	No	N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: boron (108%) – J all
chromium (33%) – J all

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?	Yes	No	N/A
Rresults supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: Silver 2 out
Cadmium 2 out
Selenium 3 out

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0657-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	3.0 u	MG/KG	3.0	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	2.6	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.29 u	MG/KG	0.29	1.0
		Iron, Total	3.2 u	MG/KG	3.2	1.0
		Potassium, Total	5.5 u	MG/KG	5.5	1.0
		Magnesium, Total	1.4 u	MG/KG	1.4	1.0
		Manganese, Total	0.02 u	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	0.67	MG/KG	0.17	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.59	MG/KG	0.36	1.0
		Silicon, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	05C0267-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J10FJ2	Silver, Total	4.3	0.85u	5.0	86.0	6.0
		Aluminum, Total	5780	5040	201	366.8*	3.0
		Arsenic, Total	188	2.1 u	201	93.6	6.0
		Boron, Total	97.0	12.1	101	84.4	6.0
		Barium, Total	265	71.4	201	96.1	6.0
		Beryllium, Total	4.8	0.06u	5.0	96.0	3.0
		Calcium, Total	8990	6240	2520	109.1	6.0
		Cadmium, Total	4.6	0.43u	5.0	92.0	6.0
		Cobalt, Total	53.6	7.1	50.3	92.4	6.0
		Chromium, Total	30.3	13.4	20.1	84.1	6.0
		Copper, Total	39.1	17.6	25.1	85.7	3.0
		Iron, Total	19600	19600	101	-48. *	6.0
		Mercury, Total	0.37	0.22	0.16	88.8	1.0
		Potassium, Total	3490	1100	2520	95.3	6.0
		Magnesium, Total	6370	3930	2520	97.1	6.0
		Manganese, Total	344	298	50.3	90.5*	6.0
		Molybdenum, Total	92.6	1.0	101	91.1	6.0
		Sodium, Total	2600	176	2520	96.4	6.0
		Nickel, Total	59.3	9.7	50.3	98.6	6.0
		Lead, Total	67.1	16.3	50.3	101.0	6.0
		Antimony, Total	24.9	2.4 u	50.3	49.5	6.0
		Selenium, Total	189	2.2 u	201	93.8	6.0
		Silicon, Total	434	352	101	81.4	6.0
		Vanadium, Total	96.1	45.9	50.3	99.8	6.0
		Zinc, Total	113	71.1	50.3	84.1	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J10FJ2	Silver, Total	0.85u	0.85u	NC	6.0
		Aluminum, Total	5040	4870	3.5	3.0
		Arsenic, Total	2.1 u	2.1 u	NC	6.0
		Boron, Total	12.1	3.6	108.3	6.0
		Barium, Total	71.4	72.7	1.8	6.0
		Beryllium, Total	0.06u	0.06u	NC	3.0
		Calcium, Total	6240	6470	3.6	6.0
		Cadmium, Total	0.43u	0.43u	NC	6.0
		Cobalt, Total	7.1	6.2	13.5	6.0
		Chromium, Total	13.4	9.6	33.0	6.0
		Copper, Total	17.6	14.6	18.6	3.0
		Iron, Total	19600	19400	1.5	6.0
		Mercury, Total	0.22	0.23	3.9	1.0
		Potassium, Total	1100	1060	3.0	6.0
		Magnesium, Total	3930	3590	9.0	6.0
		Manganese, Total	298	270	10.1	6.0
		Molybdenum, Total	1.0	0.79u	~~NC~~ 200 MW 11/21/05	6.0
		Sodium, Total	176	177	0.68	6.0
		Nickel, Total	9.7	8.6	12.0	6.0
		Lead, Total	16.3	13.2	21.0	6.0
		Antimony, Total	2.4 u	2.4 u	NC	6.0
		Selenium, Total	2.2 u	3.3	~~NC~~ 200 MW 11/21/05	6.0
		Silicon, Total	352	323	8.4	6.0
		Vanadium, Total	45.9	47.9	4.3	6.0
		Zinc, Total	71.1	59.8	17.3	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0657-LC1	Silver, LCS	49.0	50.0	MG/KG	98.0
		Aluminum, LCS	477	500	MG/KG	95.4
		Arsenic, LCS	932	1000	MG/KG	93.2
		Boron, LCS	482	500	MG/KG	96.3
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Calcium, LCS	2540	2500	MG/KG	101.7
		Cadmium, LCS	25.2	25.0	MG/KG	100.8
		Cobalt, LCS	248	250	MG/KG	99.1
		Chromium, LCS	50.5	50.0	MG/KG	101.0
		Copper, LCS	118	125	MG/KG	94.6
		Iron, LCS	507	500	MG/KG	101.3
		Potassium, LCS	2400	2500	MG/KG	96.1
		Magnesium, LCS	2450	2500	MG/KG	98.0
		Manganese, LCS	78.5	75.0	MG/KG	104.7
		Molybdenum, LCS	500	500	MG/KG	100
		Sodium, LCS	2420	2500	MG/KG	96.8
		Nickel, LCS	199	200	MG/KG	99.6
		Lead, LCS	250	250	MG/KG	99.8
		Antimony, LCS	295	300	MG/KG	98.2
		Selenium, LCS	901	1000	MG/KG	90.1
		Silicon, LCS	214	500	MG/KG	42.7
		Vanadium, LCS	248	250	MG/KG	99.2
		Zinc, LCS	99.2	100	MG/KG	99.2
LCS1	05C0267-LC1	Mercury, LCS	6.8	6.2	MG/KG	109.7

Date: 2 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Other Solid - Waste Subsite is 100-D-50:9
Subject: Semivolatile - Data Package No. K0096-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0096 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Matrix	Media	Validation	Date
J10FJ2	11/7/05	Solid		C	See note 1
J10FH7	11/7/05	Solid		C	See note 1
J10FH8	11/7/05	Solid		C	See note 1
J10FH9	11/7/05	Solid		C	See note 1

1 - Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

· **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples was qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

· **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the

spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike (55%) and LCS (56%) recoveries outside QC limits, all ideno(1,2,3-cd)pyrene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All undetected analytes in samples J10FH7 and J10FH8 and eight analyes exceeded the RQL in both J10FJ2 and J10FH9. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K0096-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples was qualified as undetected, raised to the RQL and flagged "U".

- Due to matrix spike (55%) and LCS (56%) recoveries outside QC limits, all ideno(1,2,3-cd)pyrene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All undetected analytes in samples J10FH7 and J10FH8 and eight analyes exceeded the RQL in both J10FJ2 and J10FH9. Under the BHI statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0096	REVIEWER: TLL	Project: 100-D-50 9	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination
Ideno(1,2,3-cd)pyrene	J	All	MS & LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: LLI	SDG: K0096								
Sample Number		J10FJ2		J10FH7		J10FH8		J10FH9	
Remarks									
Sample Date		11/7/05		11/7/05		11/7/05		11/7/05	
Extraction Date		11/15/05		11/15/05		11/15/05		11/15/05	
Analysis Date		11/16/05		11/16/05		11/16/05		11/16/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	360	U	1600	U	1500	U	350	U
bis(2-Chloroethyl)ether	660	360	U	1600	U	1500	U	350	U
2-Chlorophenol	660	360	U	1600	U	1500	U	350	U
1,3-Dichlorobenzene	660	360	U	1600	U	1500	U	350	U
1,4-Dichlorobenzene	660	360	U	1600	U	1500	U	350	U
1,2-Dichlorobenzene	660	360	U	1600	U	1500	U	350	U
2-Methylphenol	660	360	U	1600	U	1500	U	350	U
2,2'-oxybis(1-chloropropane)	660	360	U	1600	U	1500	U	350	U
4-Methylphenol	660	360	U	1600	U	1500	U	350	U
N-Nitroso-di-n-propylamine	660	360	U	1600	U	1500	U	350	U
Hexachloroethane	660	360	U	1600	U	1500	U	350	U
Nitrobenzene	660	360	U	1600	U	1500	U	350	U
Isophorone	660	360	U	1600	U	1500	U	350	U
2-Nitrophenol	660	360	U	1600	U	1500	U	350	U
2,4-Dimethylphenol	660	360	U	1600	U	1500	U	350	U
bis(2-Chloroethoxy)methane	660	360	U	1600	U	1500	U	350	U
2,4-Dichlorophenol	660	360	U	1600	U	1500	U	350	U
1,2,4-Trichlorobenzene	660	360	U	1600	U	1500	U	350	U
Naphthalene	660	360	U	1600	U	1500	U	350	U
4-Chloroaniline	660	360	U	1600	U	1500	U	350	U
Hexachlorobutadiene	660	360	U	1600	U	1500	U	350	U
4-Chloro-3-methylphenol	660	360	U	1600	U	1500	U	350	U
2-Methylnaphthalene	660	360	U	1600	U	1500	U	350	U
Hexachlorocyclopentadiene	660	360	U	1600	U	1500	U	350	U
2,4,6-Trichlorophenol	660	360	U	1600	U	1500	U	350	U
2,4,5-Trichlorophenol*	660	910	U	4100	U	3800	U	870	U
2-Chloronaphthalene	660	360	U	1600	U	1500	U	350	U
2-Nitroaniline*	660	910	U	4100	U	3800	U	870	U
Dimethylphthalate	660	360	U	1600	U	1500	U	350	U
Acenaphthylene	660	360	U	1600	U	1500	U	350	U
2,6-Dinitrotoluene	660	360	U	1600	U	1500	U	350	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: LLI	SDG: K0096								
Sample Number		J10FJ2		J10FH7		J10FH8		J10FH9	
Remarks									
Sample Date		11/7/05		11/7/05		11/7/05		11/7/05	
Extraction Date		11/15/05		11/15/05		11/15/05		11/15/05	
Analysis Date		11/16/05		11/16/05		11/16/05		11/16/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	910	U	4100	U	3800	U	870	U
Acenaphthene	660	22		1600	U	1500	U	350	U
2,4-Dinitrophenol*	660	910	U	4100	U	3800	U	870	U
4-Nitrophenol*	660	910	U	4100	U	3800	U	870	U
Dibenzofuran	660	360	U	1600	U	1500	U	350	U
2,4-Dinitrotoluene	660	360	U	1600	U	1500	U	350	U
Diethylphthalate	660	360	U	1600	U	1500	U	350	U
4-Chlorophenyl-phenyl ether	660	360	U	1600	U	1500	U	350	U
Fluorene	660	360	U	1600	U	1500	U	350	U
4-Nitroaniline*	660	910	U	4100	U	3800	U	870	U
4,6-Dinitro-2-methylphenol*	660	910	U	4100	U	3800	U	870	U
N-Nitrosodiphenylamine	660	360	U	1600	U	1500	U	350	U
4-Bromophenyl-phenyl ether	660	360	U	1600	U	1500	U	350	U
Hexachlorobenzene	660	360	U	1600	U	1500	U	350	U
Pentachlorophenol*	660	910	U	4100	U	3800	U	870	U
Phenanthrene	660	170		250		88		350	U
Anthracene	660	35		1600	U	1500	U	350	U
Carbazole	660	20		1600	U	1500	U	350	U
Di-n-butylphthalate	660	360	U	1600	U	1500	U	20	
Fluoranthene	660	260		600		230		350	U
Pyrene	660	320		760		300		350	U
Butylbenzylphthalate	660	360	U	210		100		350	U
3,3'-Dichlorobenzidine	660	360	U	1600	U	1500	U	350	U
Benzo(a)anthracene	660	160		640		270		350	U
Chrysene	660	210		650		290		350	U
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	360	U	1600	U	1500	U	350	U
Benzo(b)fluoranthene	660	150		710		340		350	U
Benzo(k)fluoranthene	660	150		650		310		350	U
Benzo(a)pyrene	660	160		760		360		350	U
Indeno(1,2,3-cd)pyrene	660	78	J	390	J	160	J	350	UJ
Dibenz(a,h)anthracene	660	26		94		1500	U	350	U
Benzo(g,h,i)perylene	660	92		400		230		350	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 11/18/05 11:23

RFW Batch Number: 0511L671 — Client: TNUHANFORD RC-030 K0096 — Work Order: 11343606001 — Page: 1a

	Cust ID:	J10FJ2	J10FH7	J10FH8	J10FH9	J10FH9	J10FH9
Sample Information	RFW#:	001	002	003	004	004 MS	004 MSD
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	4.00	4.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	59 %	60 %	59 %	59 %	70 %	70 %
	2-Fluorobiphenyl	62 %	57 %	57 %	61 %	70 %	72 %
	Terphenyl-d14	83 %	65 %	69 %	81 %	69 %	72 %
	Phenol-d5	75 %	71 %	70 %	79 %	69 %	73 %
	2-Fluorophenol	62 %	66 %	63 %	65 %	66 %	66 %
	2,4,6-Tribromophenol	66 %	57 %	57 %	60 %	78 %	81 %
Phenol		360 U	1600 U	1500 U	350 U	73 %	81 %
bis(2-Chloroethyl)ether		360 U	1600 U	1500 U	350 U	72 %	76 %
2-Chlorophenol		360 U	1600 U	1500 U	350 U	71 %	76 %
1,3-Dichlorobenzene		360 U	1600 U	1500 U	350 U	63 %	67 %
1,4-Dichlorobenzene		360 U	1600 U	1500 U	350 U	62 %	66 %
1,2-Dichlorobenzene		360 U	1600 U	1500 U	350 U	66 %	70 %
2-Methylphenol		360 U	1600 U	1500 U	350 U	73 %	81 %
2,2'-oxybis(1-Chloropropane)		360 U	1600 U	1500 U	350 U	73 %	76 %
4-Methylphenol		360 U	1600 U	1500 U	350 U	75 %	86 %
N-Nitroso-di-n-propylamine		360 U	1600 U	1500 U	350 U	75 %	82 %
Hexachloroethane		360 U	1600 U	1500 U	350 U	59 %	64 %
Nitrobenzene		360 U	1600 U	1500 U	350 U	71 %	74 %
Isophorone		360 U	1600 U	1500 U	350 U	84 %	89 %
2-Nitrophenol		360 U	1600 U	1500 U	350 U	73 %	77 %
2,4-Dimethylphenol		360 U	1600 U	1500 U	350 U	68 %	76 %
bis(2-Chloroethoxy)methane		360 U	1600 U	1500 U	350 U	75 %	80 %
2,4-Dichlorophenol		360 U	1600 U	1500 U	350 U	76 %	84 %
1,2,4-Trichlorobenzene		360 U	1600 U	1500 U	350 U	67 %	70 %
Naphthalene		360 U	1600 U	1500 U	350 U	68 %	71 %
4-Chloroaniline		360 U	1600 U	1500 U	350 U	85 %	93 %
Hexachlorobutadiene		360 U	1600 U	1500 U	350 U	72 %	75 %
4-Chloro-3-methylphenol		360 U	1600 U	1500 U	350 U	77 %	88 %
2-Methylnaphthalene		360 U	1600 U	1500 U	350 U	75 %	81 %
Hexachlorocyclopentadiene		360 U	1600 U	1500 U	350 U	44 %	45 %
2,4,6-Trichlorophenol		360 U	1600 U	1500 U	350 U	76 %	84 %
2,4,5-Trichlorophenol		910 U	4100 U	3800 U	870 U	77 %	86 %

*= Outside of EPA CLP QC limits.

1/31/06

00000007

00000313

Cust ID:	J10FJ2		J10FH7		J10FH8		J10FH9		J10FH9		J10FH9	
RFW#:	001		002		003		004		004 MS		004 MSD	
2-Chloronaphthalene	360	U	1600	U	1500	U	350	U	73	%	79	%
2-Nitroaniline	910	U	4100	U	3800	U	870	U	83	%	93	%
Dimethylphthalate	360	U	1600	U	1500	U	350	U	78	%	89	%
Acenaphthylene	360	U	1600	U	1500	U	350	U	73	%	81	%
2,6-Dinitrotoluene	360	U	1600	U	1500	U	350	U	79	%	88	%
3-Nitroaniline	910	U	4100	U	3800	U	870	U	91	%	103	%
Acenaphthene	22	J	1600	U	1500	U	350	U	73	%	81	%
2,4-Dinitrophenol	910	U	4100	U	3800	U	870	U	26	%	29	%
4-Nitrophenol	910	U	4100	U	3800	U	870	U	75	%	88	%
Dibenzofuran	360	U	1600	U	1500	U	350	U	74	%	83	%
2,4-Dinitrotoluene	360	U	1600	U	1500	U	350	U	80	%	93	%
Diethylphthalate	360	U	1600	U	1500	U	350	U	78	%	88	%
4-Chlorophenyl-phenylether	360	U	1600	U	1500	U	350	U	72	%	80	%
Fluorene	360	U	1600	U	1500	U	350	U	75	%	84	%
4-Nitroaniline	910	U	4100	U	3800	U	870	U	82	%	94	%
4,6-Dinitro-2-methylphenol	910	U	4100	U	3800	U	870	U	47	%	59	%
N-Nitrosodiphenylamine (1)	360	U	1600	U	1500	U	350	U	65	%	72	%
4-Bromophenyl-phenylether	360	U	1600	U	1500	U	350	U	67	%	75	%
Hexachlorobenzene	360	U	1600	U	1500	U	350	U	73	%	81	%
Pentachlorophenol	910	U	4100	U	3800	U	870	U	76	%	88	%
Phenanthrene	170	J	250	J	88	J	350	U	75	%	83	%
Anthracene	35	J	1600	U	1500	U	350	U	76	%	85	%
Carbazole	20	J	1600	U	1500	U	350	U	83	%	92	%
Di-n-butylphthalate	360	U	1600	U	1500	U	20	J	81	%	91	%
Fluoranthene	260	J	600	J	230	J	350	U	85	%	93	%
Pyrene	320	J	760	J	300	J	350	U	69	%	77	%
Butylbenzylphthalate	360	U	210	J	100	J	350	U	77	%	83	%
3,3'-Dichlorobenzidine	360	U	1600	U	1500	U	350	U	90	%	100	%
Benzo(a)anthracene	160	J	640	J	270	J	350	U	77	%	85	%
Chrysene	210	J	650	J	290	J	350	U	74	%	80	%
bis(2-Ethylhexyl)phthalate	660 ~~320~~ JB U		660 ~~340~~ JB U		660 ~~340~~ JB U		660 ~~150~~ JB U		86	%	91	%
Di-n-octyl phthalate	360	U	1600	U	1500	U	350	U	121	%	129	%
Benzo(b)fluoranthene	150	J	710	J	340	J	350	U	81	%	89	%
Benzo(k)fluoranthene	150	J	650	J	310	J	350	U	83	%	89	%
Benzo(a)pyrene	160	J	760	J	360	J	350	U	72	%	80	%
Indeno(1,2,3-cd)pyrene	78	J	390	J	160	J	350	U J	55 *	%	67	%
Dibenz(a,h)anthracene	26	J	94	J	1500	U	350	U	56	%	68	%
Benzo(g,h,i)perylene	92	J	400	J	230	J	350	U	50	%	61	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1/31/06

	Cust ID:	SBLKQX		SBLKQX BS		
Sample Information	RFW#:	05LE0901-MB1		05LE0901-MB1		
	Matrix:	SOIL		SOIL		
	D.F.:	1.00		1.00		
	Units:	ug/Kg		ug/Kg		
Surrogate Recovery	Nitrobenzene-d5	62	%	66	%	
	2-Fluorobiphenyl	58	%	65	%	
	Terphenyl-d14	87	%	67	%	
	Phenol-d5	71	%	65	%	
	2-Fluorophenol	64	%	63	%	
	2,4,6-Tribromophenol	62	%	73	%	
Phenol		330	U	68	%	
bis(2-Chloroethyl)ether		330	U	70	%	
2-Chlorophenol		330	U	68	%	
1,3-Dichlorobenzene		330	U	63	%	
1,4-Dichlorobenzene		330	U	62	%	
1,2-Dichlorobenzene		330	U	67	%	
2-Methylphenol		330	U	69	%	
2,2'-oxybis(1-Chloropropane)		330	U	70	%	
4-Methylphenol		330	U	71	%	
N-Nitroso-di-n-propylamine		330	U	73	%	
Hexachloroethane		330	U	62	%	
Nitrobenzene		330	U	66	%	
Isophorone		330	U	76	%	
2-Nitrophenol		330	U	66	%	
2,4-Dimethylphenol		330	U	62	%	
bis(2-Chloroethoxy)methane		330	U	69	%	
2,4-Dichlorophenol		330	U	69	%	
1,2,4-Trichlorobenzene		330	U	64	%	
Naphthalene		330	U	64	%	
4-Chloroaniline		330	U	78	%	
Hexachlorobutadiene		330	U	71	%	
4-Chloro-3-methylphenol		330	U	70	%	
2-Methylnaphthalene		330	U	69	%	
Hexachlorocyclopentadiene		330	U	48	%	
2,4,6-Trichlorophenol		330	U	69	%	
2,4,5-Trichlorophenol		830	U	70	%	

*= Outside of EPA CLP QC limits.

11/21/06

Cust ID: SBLKQK SBLKQK BS

RFW#: 05LE0901-MB1 05LE0901-MB1

2-Chloronaphthalene	330	U	67	%
2-Nitroaniline	830	U	75	%
Dimethylphthalate	330	U	71	%
Acenaphthylene	330	U	68	%
2,6-Dinitrotoluene	330	U	72	%
3-Nitroaniline	830	U	80	%
Acenaphthene	330	U	69	%
2,4-Dinitrophenol	830	U	36	%
4-Nitrophenol	830	U	69	%
Dibenzofuran	330	U	69	%
2,4-Dinitrotoluene	330	U	73	%
Diethylphthalate	330	U	71	%
4-Chlorophenyl-phenylether	330	U	67	%
Fluorene	330	U	69	%
4-Nitroaniline	830	U	70	%
4,6-Dinitro-2-methylphenol	830	U	61	%
N-Nitrosodiphenylamine (1)	330	U	61	%
4-Bromophenyl-phenylether	330	U	66	%
Hexachlorobenzene	330	U	68	%
Pentachlorophenol	830	U	79	%
Phenanthrene	330	U	71	%
Anthracene	330	U	73	%
Carbazole	330	U	64	%
Di-n-butylphthalate	330	U	76	%
Fluoranthene	330	U	77	%
Pyrene	330	U	68	%
Butylbenzylphthalate	330	U	73	%
3,3'-Dichlorobenzidine	330	U	81	%
Benzo(a)anthracene	330	U	72	%
Chrysene	330	U	73	%
bis(2-Ethylhexyl)phthalate	99	J	76	%
Di-n-octyl phthalate	330	U	88	%
Benzo(b)fluoranthene	330	U	74	%
Benzo(k)fluoranthene	330	U	76	%
Benzo(a)pyrene	330	U	72	%
Indeno(1,2,3-cd)pyrene	330	U	56 *	%
Dibenz(a,h)anthracene	330	U	57	%
Benzo(g,h,i)perylene	330	U	53	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

11/3/04

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L671
SDG/SAF # K0096/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

SEMIVOLATILE

Four (4) solid samples were collected on 11-07-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 11-15-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 11-16-2005.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. Samples J10FH7 and J10FH8 required a 2-fold dilution and both samples were analyzed using 2mL final volume due to the nature of the sample matrix. A copy of the Sample Extraction Record has been enclosed.
5. All surrogate recoveries were within acceptance criteria.
6. One (1) of one hundred twenty-eight (128) matrix spike recoveries was outside acceptance criteria. One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/21/05
Date

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 05MS363

Initiator: Jim DeLEY
Date: 17 Nov 2005
Client: TNU

Batch: 05112671
Samples: MS & BS
Method: SW846/MCAWW/CLP/

Parameter: 0625H
Matrix: Solid
Prep Batch: 05LE0901

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

2 spikes slightly low

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

NARRATE

4. Project Manager Instructions...signature/date: 11/21/05

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 11/21/05 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
(1)	X Project Mgr: Stone/Johnson		__ GC/LC: Kiger
__	__ Data Management: Stilwell	(2)	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	X Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 1 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9		SAF No. RC-030		
Ice Chest No. AFS-04-120	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060108		Bill of Lading/Air Bill No. see OSAC		

POSSIBLE SAMPLE HAZARDS/REMARKS
Non Rad

Special Handling and/or Storage
Cool 4°C

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)		1	1	1	1	1				
Volume	500mL	120mL	60mL	60mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; [redacted]	VOA - [redacted] (TCL)	Semi-VOA - 8270A (TCL)	TPH ([redacted]) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time									
J10FH7	OTHER SOLID	11/7/05	0810		X	X		X				
J10FH8	OTHER SOLID	11/7/05	0820		X	X		X				
J10FH9	OTHER SOLID	11/7/05	0930		X	X		X				
~~J10FJ0~~	~~OTHER SOLID~~	11/7/05										
J10FJ1	OTHER SOLID	11/7/05										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1330	Received By/Stored In	Date/Time
M Stankovich	11/7/05	M 3728/2C	11/7/05 1330
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Ref 2C	11/8/05 1000	[redacted]	11/8/05 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[redacted]	11/8/05 1000	Fed EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed EX	11/9/05 0985	P. Kessner	11-9-05 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium
(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 2 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9		SAF No. RC-030	Data Turnaround 15 Days
Ice Chest No. ERL-01-027	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060109		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

0000021

SAMPLE ANALYSIS	Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
	Type of Container	G	G/P	aG	G	aG	G				
	No. of Container(s)		1	1		1	1				
	Volume	500mL	120mL	60mL	60mL	60mL	250mL				
		See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
J10FJ2	OTHER SOLID	11/7/05	1200	X	X		X	X			
~~J10FJ3~~	~~OTHER SOLID~~	BH 11/7/05									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BILL HUDSON	11/7/05 1700	3728 BLDG 2B	1200 11/7/05
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Rm 2B	11/8/05 1230		11/8/05 1230
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
	11/8/05 1230	FedEx	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	11/9/05 0935		11/9/05 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-5019			DATA PACKAGE: K0096		
VALIDATOR: TLI		LAB: LLI		DATE: 1/20/06	
			SDG: K0096		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J10FJ2 J10FH7 J10FH8 J10F89					
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... Yes (No) N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FD
bis(2-ethylhexyl) phthalate - U at RDL all

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... (Yes) No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... Yes (No) N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: MS - Ideno(123-cd)pyrene - J all no DT
LCS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:_____

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:_____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:_____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	(N/A)
Compound quantitation acceptable? (Levels D, E)	(Yes)	No	N/A
Results reported for all requested analyses?	(Yes)	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	(N/A)
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes	No	(N/A)
Detection limits meet RDL?	Yes	(No)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: all ones in H7 + H8 8 ones in J2 + H5

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Date: 2 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite is 100-D-50:9
Subject: Radiochemistry - Data Package No. K0096-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0096 prepared by Eberline Services. (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Matrix	Validation	Date
J10FJ2	11/7/05	Solid	C	See note 1
J10FH7	11/7/05	Solid	C	See note 1
J10FH8	11/7/05	Solid	C	See note 1
J10FH9	11/7/05	Solid	C	See note 1

1 – Gross alpha/beta, total uranium and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

· **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

· **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

· **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If

either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (55%), all thorium-228 results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Seventeen analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0096 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (55%), all thorium-228 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Seventeen analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0096		REVIEWER: TL	Project: 100-D-50:9	PAGE 1 OF 1
COMMENTS:				
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON	
Thorium-228	J	All	RPD	

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: EB	SDG: K0096								
Sample Number		J10FJ2		J10FH7		J10FH8		J10FH9	
Remarks									
Sample Date		11/7/05		11/7/05		11/7/05		11/7/05	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Gross Alpha		7.22		6.80		9.42		7.58	
Gross Beta		15.2		18.7		18.7		14.1	
Total uranium (ug/g)		1.06		1.46		1.66		1.04	
Potassium-40		9.54		10.0		8.27		7.79	
Cobalt 60	0.05	U	U*	U	U*	U	U*	U	U*
Cesium 137	0.05	0.638		2.16		3.70		U	U*
Radium-226		0.369		0.564		U	U	0.423	
Radium-228		U	U	U	U	U	U	U	U
Europium 152	0.1	U	U*	U	U*	U	U*	U	U*
Europium 154	0.1	U	U*	U	U*	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*	U	U*	U	U*
Thorium-228		0.638	J	0.399	J	0.502	J	0.686	J
Thorium-232		U	U	U	U	U	U	U	U
Uranium-235(gea)		U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U

000010

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-04 J10FJ2

DATA SHEET

SDG	7772	Client/Case no	Hanford		SDG K0096
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R511109-04	Client sample id	J10FJ2		
Dept sample id	7772-004	Location/Matrix	100-D-50:9		SOLID
Received	11/09/05	Collected/Weight	11/07/05 12:00	541 g	
% solids	100.0	Custody/SAF No	RC-030-026	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.22	3.5	3.7	10		93A
Gross Beta	12587-47-2	15.2	4.3	5.9	15		93B
Total Uranium (ug/g)	7440-61-1	1.06	0.12	0.019	1.0		U_T
Potassium 40	13966-00-2	9.54	3.1	0.73			GAM
Cobalt 60	10198-40-0	U		0.094	0.050	U	GAM
Cesium 137	10045-97-3	0.638	0.099	0.10	0.10		GAM
Radium 226	13982-63-3	0.369	0.15	0.14	0.10		GAM
Radium 228	15262-20-1	U		0.65	0.20	U	GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	0.638	0.14	0.14		J	GAM
Thorium 232	TH-232	U		0.65		U	GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		9.8		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

K 1/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-01 **J10FH7**

DATA SHEET

SDG	7772	Client/Case no	Hanford	SDG_K0096	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R511109-01	Client sample id	J10FH7		
Dept sample id	7772-001	Location/Matrix	100-D-50:9	SOLID	
Received	11/09/05	Collected/Weight	11/07/05 08:20	370 g	
% solids	100.0	Custody/SAF No	RC-030-026	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.80	3.8	3.5	10		93A
Gross Beta	12587-47-2	18.7	4.3	5.6	15		93B
Total Uranium (ug/g)	7440-61-1	1.46	0.17	0.019	1.0		U_T
Potassium 40	13966-00-2	10.0	4.4	1.2			GAM
Cobalt 60	10198-40-0	U		0.21	0.050	U	GAM
Cesium 137	10045-97-3	2.16	0.19	0.15	0.10		GAM
Radium 226	13982-63-3	0.564	0.22	0.20	0.10		GAM
Radium 228	15262-20-1	U		0.64	0.20	U	GAM
Europium 152	14683-23-9	U		0.28	0.10	U	GAM
Europium 154	15585-10-1	U		0.36	0.10	U	GAM
Europium 155	14391-16-3	U		0.27	0.10	U	GAM
Thorium 228	14274-82-9	0.399	0.11	0.13		J	GAM
Thorium 232	TH-232	U		0.64		U	GAM
Uranium 235	15117-96-1	U		0.39		U	GAM
Uranium 238	U-238	U		13		U	GAM
Americium 241	14596-10-2	U		0.41		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

1/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-02 **J10FH8**

DATA SHEET

SDG	7772	Client/Case no	Hanford		SDG K0096
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R511109-02	Client sample id	J10FH8		
Dept sample id	7772-002	Location/Matrix	100-D-50:9		SOLID
Received	11/09/05	Collected/Weight	11/07/05 08:20	394 g	
% solids	100.0	Custody/SAF No	RC-030-026	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	9.42	3.6	3.3	10		93A
Gross Beta	12587-47-2	18.7	4.2	5.6	15		93B
Total Uranium (ug/g)	7440-61-1	1.66	0.17	0.019	1.0		U_T
Potassium 40	13966-00-2	8.27	1.7	1.2			GAM
Cobalt 60	10198-40-0	U		0.17	0.050	U	GAM
Cesium 137	10045-97-3	3.70	0.26	0.12	0.10		GAM
Radium 226	13982-63-3	U		0.82	0.10	U	GAM
Radium 228	15262-20-1	U		0.96	0.20	U	GAM
Europium 152	14683-23-9	U		0.43	0.10	U	GAM
Europium 154	15585-10-1	U		0.49	0.10	U	GAM
Europium 155	14391-16-3	U		0.27	0.10	U	GAM
Thorium 228	14274-82-9	0.502	0.19	0.20		J	GAM
Thorium 232	TH-232	U		0.96		U	GAM
Uranium 235	15117-96-1	U		0.48		U	GAM
Uranium 238	U-238	U		17		U	GAM
Americium 241	14596-10-2	U		0.26		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

11/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-03 J10FH9

DATA SHEET

SDG	7772	Client/Case no	Hanford		SDG K0096
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R511109-03	Client sample id	J10FH9		
Dept sample id	7772-003	Location/Matrix	100-D-50:9		SOLID
Received	11/09/05	Collected/Weight	11/07/05 09:30	589 g	
% solids	100.0	Custody/SAF No	RC-030-026	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.58	3.5	3.6	10		93A
Gross Beta	12587-47-2	14.1	4.0	5.5	15		93B
Total Uranium (ug/g)	7440-61-1	1.04	0.12	0.019	1.0		U_T
Potassium 40	13966-00-2	7.79	1.7	0.89			GAM
Cobalt 60	10198-40-0	U		0.096	0.050	U	GAM
Cesium 137	10045-97-3	U		0.089	0.10	U	GAM
Radium 226	13982-63-3	0.423	0.15	0.16	0.10		GAM
Radium 228	15262-20-1	U		0.49	0.20	U	GAM
Europium 152	14683-23-9	U		0.24	0.10	U	GAM
Europium 154	15585-10-1	U		0.32	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.686	0.13	0.11		J	GAM
Thorium 232	TH-232	U		0.49		U	GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.095		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

11/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0096 was composed of four other solid samples designated under SAF No. RC-030 with a Project Designation of: Remaining Sites Confirmation Sampling – Other Solid. The Sampling Location was 100-D50:9.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on November 30, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Senior Program Manager

12/02/05
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 1 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9 K0096 (7772)		SAF No. RC-030		
Ice Chest No. AFS-04-057	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
~~Shipped To~~ EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060088		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
Non Rad

Special Handling and/or Storage
None

0000017

SAMPLE ANALYSIS	Preservation	None	[redacted]	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
	Type of Container	G/P	G/P	aG	G	aG	G				
	No. of Container(s)	1	1	1	1	1	1				
	Volume	500mL	120mL	60mL	[redacted]mL	60mL	250mL				
		See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	[redacted]i-VOA - 82[redacted] (TCL)	TFH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time								
J10FH7	OTHER SOLID	11/7/05	0810	X							
J10FH8	OTHER SOLID	11/7/05	0820	X							
J10FH9	OTHER SOLID	11/7/05	0930	X							
~~J10EJ0~~	~~OTHER SOLID~~	ND 11/7/05									
~~J10EJ1~~	~~OTHER SOLID~~	11/7/05									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1330	Received By/Stored In	Date/Time
mstankovich	11/7/05	3728/2C	11/7/05 1330
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Ref 2C	11/8/05 1000	D St John Bernd Soga	11/8/05 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D St John WCH Bernd Soga	11/8/05 1000	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11/09/05	Mun	11/09/05 9:30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

ND 11/7/05

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; [redacted] Gross Alpha & Gross Beta; [redacted] Total Uranium

(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 2 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9 K0096 (7772)		SAF No. RC-030		
Ice Chest No. ERC-01-037	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. A060089		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
Non Rad

Special Handling and/or Storage
Cool 4°C

0000018

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)	1	B Hudson 11/7/05		1		1				
Volume	500mL	120mL	60mL	60mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time							
J10FJ2	OTHER SOLID	11/7/05	1200	X						
~~J10FJ3~~	~~OTHER SOLID~~	B.H. 11/7/05								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B.L. HUDSON B Hudson	11/7/05 1700	3728 BLDG Ref 2B	11/7/05 1700
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Ref 2B	11/8/05 1230	D.S. Johnson D Johnson	11/8/05 1230
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D.S. Johnson D Johnson	11/8/05 1230	FedEx	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX	11/09/05	FW	11/09/05 9:30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - ~~Add-on {Americium-241}; Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium; Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234; Uranium-235; Uranium-238};~~ Total Uranium

(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-50:9			DATA PACKAGE: K0096		
VALIDATOR: TLT		LAB: EB		DATE: 1/24/02	
			SDG: K0096		
ANALYSES PERFORMED					
Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy	Gamma Spectroscopy	
SAMPLES/MATRIX					
J10FH7 J10FH8 J10FH7 J10FJ2					
					Soil

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E) N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... (Yes) No N/A
Method blank results acceptable? ..... (Yes) No N/A
Analytes detected in method blank? ..... Yes (No) N/A
Field blank(s) analyzed? ..... Yes (No) N/A
Field blank results acceptable? ..... Yes No (N/A)
Analytes detected in field blank(s)? ..... Yes No (N/A)
Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... (Yes) No N/A
LCS/BSS recoveries acceptable? ..... (Yes) No N/A
LCS/BSS traceable? (Levels D,E) ..... Yes No (N/A)
LCS/BSS expired? (Levels D,E) ..... Yes No (N/A)
LCS/BSS levels correct? (Levels D,E) ..... Yes No (N/A)
Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)
Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A
Chemical recovery acceptable? ..... Yes No N/A
Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

8. Tracer Recovery (Levels C, D, E) ..... ☒ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: Th 228 – J all (5570)

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split sample(s) analyzed? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no Field QC

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses?	Yes	No	N/A
Results supported in raw data?(Levels D, E)	Yes	No	N/A
Results Acceptable? (Levels D, E)	Yes	No	N/A
Transcription/Calculation errors? (Levels D, E)	Yes	No	N/A
MDA's meet required detection limits?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: 17 am

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-06 **Method Blank**

METHOD BLANK

SDG 7772	Client/Case no Hanford	SDG K0096	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R511109-06	Client sample id Method Blank		
Dept sample id 7772-006	Material/Matrix	SOLID	
	SAF No RC-030		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.28	1.4	4.0	10	U	93A
Gross Beta	12587-47-2	-0.503	3.7	6.4	15	U	93B
Total Uranium (ug/g)	7440-61-1	0	0.008	0.019	1.0	U	U_T
Potassium 40	13966-00-2	U		0.90		U	GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Cesium 137	10045-97-3	U		0.085	0.10	U	GAM
Radium 226	13982-63-3	U		0.16	0.10	U	GAM
Radium 228	15262-20-1	U		0.32	0.20	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.28	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	U		0.10		U	GAM
Thorium 232	TH-232	U		0.32		U	GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.079		U	GAM

Remain.Sites Confirm.Samp. - 0.Solid

QC-BLANK #55093

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-05 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7772 Client/Case no Hanford SDG K0096

Contact Melissa C. Mannion Contract No. 630

Lab sample id R511109-05 Client sample id Lab Control Sample

Dept sample id 7772-005 Material/Matrix SOLID

SAF No RC-030

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	265	20	3.4	10		93A	230	9.2	115	63-137	70-130
Gross Beta	230	11	5.4	15		93B	218	8.7	106	74-126	70-130
Total Uranium (ug/g)	36.2	4.3	0.19	1.0		U_T	36.2	1.4	100	77-123	80-120
Cobalt 60	3.68	0.32	0.18	0.050		GAM	3.43	0.14	107	71-129	80-120
Cesium 137	3.94	0.29	0.18	0.10		GAM	3.51	0.14	112	71-129	80-120

Remain.Sites Confirm.Samp. - O.Solid

QC-LCS #55092

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/30/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0096

R511109-07 J10FH7

DUPLICATE

SDG 7772 Client/Case no Hanford SDG K0096

Contact Melissa C. Mannion Contract No. 630

DUPLICATE	ORIGINAL	
Lab sample id R511109-07	Lab sample id R511109-01	Client sample id J10FH7
Dept sample id 7772-007	Dept sample id 7772-001	Location/Matrix 100-D-50:9 SOLID
	Received 11/09/05	Collected/Weight 11/07/05 08:20 370 g
% solids 100.0	% solids 100.0	Custody/SAF No RC-030-026 RC-030

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	6.45	3.2	3.1	10		93A	6.80	3.8	3.5		5	120	0.1
Gross Beta	14.8	4.0	5.3	15		93B	18.7	4.3	5.6		23	62	1.1
Total Uranium (ug/g)	1.42	0.16	0.019	1.0		U_T	1.46	0.17	0.019		3	31	0.3
Potassium 40	11.0	2.0	1.3			GAM	10.0	4.4	1.2		10	76	0.4
Cobalt 60	U		0.15	0.050	U	GAM	U		0.21	U	-		0.5
Cesium 137	2.28	0.25	0.16	0.10		GAM	2.16	0.19	0.15		5	38	0.4
Radium 226	0.501	0.23	0.23	0.10		GAM	0.564	0.22	0.20		12	95	0.4
Radium 228	U		0.69	0.20	U	GAM	U		0.64	U	-		0.1
Europium 152	U		0.43	0.10	U	GAM	U		0.28	U	-		0.6
Europium 154	U		0.45	0.10	U	GAM	U		0.36	U	-		0.3
Europium 155	U		0.27	0.10	U	GAM	U		0.27	U	-		0
Thorium 228	0.702	0.19	0.18			GAM	0.399	0.11	0.13		55	68	2.4
Thorium 232	U		0.69		U	GAM	U		0.64	U	-		0.1
Uranium 235	U		0.42		U	GAM	U		0.39	U	-		0.1
Uranium 238	U		18		U	GAM	U		13	U	-		0.4
Americium 241	U		0.24		U	GAM	U		0.41	U	-		0.7

Remain.Sites Confirm.Samp. - O.Solid

QC-DUP#1 55094

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 11/30/05

Date: 2 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite is 100-D-50:9
Subject: PCB/Pesticide/Herbicide - Data Package No. K0096-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0096 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10FJ2	11/7/05	Solid	C	See note 1
J10FH7	11/7/05	Solid	C	See note 1
J10FH8	11/7/05	Solid	C	See note 1
J10FH9	11/7/05	Solid	C	See note 1

1 – PCBs by 8082, pesticides by 8081A and chlorinated herbicides by 8151A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all

associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike outside QC limits (127%), all detected 4,4'-DDE results were qualified as estimates and flagged "J".

Due to a matrix spike outside QC limits (129%), all detected endosulfan II results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. Dalpon, dichloroprop and 2,4-DB exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data Package No. K0096 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike outside QC limits (127%), all detected 4,4'-DDE results were qualified as estimates and flagged "J". Due to a matrix spike outside QC limits (129%), all detected endosulfan II results were qualified as estimates and flagged "J". Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB/HERBICIDE DATA QUALIFICATION SUMMARY*

SDG: K0096	REVIEWER: TL	Project: 100-D-5019	PAGE: 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
4,4'-DDE	J	J10FJ2, J10FH7 J10FH8	MS recovery
Endosulfan II	J	J10FH7,J10FH8	MS recovery
Toxaphene	J	All	No MS, MSD or LCS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PESTICIDE/PCB/HERBICIDE ANALYSIS, SOIL MATRIX, (UG/KG) Page__1__ of__2__

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: LLI	SDG: K0096								
Sample Number		J10FJ2		J10FH7		J10FH8		J10FH9	
Remarks									
Sample Date		11/7/05		11/7/05		11/7/05		11/7/05	
Extraction Date		11/11/05		11/11/05		11/11/05		11/11/05	
Analysis Date		11/16/05		11/16/05		11/16/05		11/16/05	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	100	36	U	41	U	38	U	35	U
Aroclor-1221	100	36	U	41	U	38	U	35	U
Aroclor-1232	100	36	U	41	U	38	U	35	U
Aroclor-1242	100	36	U	41	U	38	U	35	U
Aroclor-1248	100	36	U	41	U	38	U	35	U
Aroclor-1254	100	36	U	41	U	38	U	35	U
Aroclor-1260	100	25		290		200		35	U
Sample Number		J10FJ2		J10FH7		J10FH8		J10FH9	
Remarks									
Sample Date		11/7/05		11/7/05		11/7/05		11/7/05	
Extraction Date		11/11/05		11/11/05		11/11/05		11/11/05	
Analysis Date		11/15/05		11/15/05		11/15/05		11/15/05	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.4	U	4.1	U	3.8	U	1.4	U
Gamma-BHC (Lindane)	5	1.4	U	4.1	U	3.8	U	1.4	U
Beta-BHC	5	1.4	U	4.1	U	3.8	U	1.4	U
Heptachlor	5	1.4	U	4.1	U	3.8	U	1.4	U
Delta-BHC	5	1.4	U	4.1	U	3.8	U	1.4	U
Aldrin	5	1.4	U	4.1	U	3.8	U	1.4	U
Heptachlor Epoxide	5	1.4	U	4.1	U	3.8	U	1.4	U
gamma-Chlordane	5	1.4	U	4.1	U	3.8	U	1.4	U
Endosulfan I	5	1.4	U	4.1	U	3.8	U	1.4	U
alpha-Chlordane	5	1.4	U	4.1	U	3.8	U	1.4	U
4,4'-DDE	5	1.2	J	6.6	J	6.5	J	1.4	U
Dieldrin	5	1.4	U	3.7		3.2		1.4	U
Endrin	5	1.4	U	4.1	U	3.8	U	1.4	U
4,4'-DDD	5	1.4	U	4.1	U	3.8	U	1.4	U
Endosulfan II	5	1.4	U	7.6	J	5.6	J	1.4	U
4,4'-DDT	5	1.4	U	4.1	U	3.8	U	1.4	U
Endrin Aldehyde	5	1.4	U	4.1	U	3.8	U	1.4	U
Endosulfan sulfate	5	1.4	U	4.1	U	6.9		1.4	U
Methoxychlor	5	1.4	U	10		3.8	U	1.4	U
Endrin ketone	5	1.4	U	4.1	U	3.8	U	1.4	U
Toxaphene	5	14	UJ	41	UJ	38	UJ	14	UJ

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: LLI	SDG: K0096								
Sample Number		J10FJ2							
Remarks									
Sample Date		11/7/05							
Extraction Date		11/15/05							
Analysis Date		11/18/05							
Herbicides	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Dalapon	100	180	U						
Dicamba	100	72	U						
Dichloroprop	100	180	U						
2,4-D	100	47							
2,4,5-TP (Silvex)	100	18	U						
2,4,5-T	100	18	U						
2,4-DB	100	180	U						
Dinoseb	100	18	U						
Pentachlorophenol	100	14	U						

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/22/05 12:04

RFW Batch Number: 0511L671 Client: TNUHANFORD RC-030 K0096 Work Order: 11343606001 Page: 1

	Cust ID:	J10FJ2	J10FJ2	J10FJ2	J10FH7	J10FH8	J10FH9
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		71 %	69 %	65 %	74 %	74 %	89 %
Decachlorobiphenyl		78 %	82 %	66 %	81 %	72 %	87 %
Aroclor-1016		36 U	96 %	92 %	41 U	38 U	35 U
Aroclor-1221		36 U	36 U	36 U	41 U	38 U	35 U
Aroclor-1232		36 U	36 U	36 U	41 U	38 U	35 U
Aroclor-1242		36 U	36 U	36 U	41 U	38 U	35 U
Aroclor-1248		36 U	36 U	36 U	41 U	38 U	35 U
Aroclor-1254		36 U	36 U	36 U	41 U	38 U	35 U
Aroclor-1260		25 J	99 %	94 %	290	200	35 U

	Cust ID:	PBLKWF	PBLKWF BS
Sample Information	RFW#:	05LE0892-MB1	05LE0892-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		73 %	67 %
Decachlorobiphenyl		78 %	86 %
Aroclor-1016		33 U	96 %
Aroclor-1221		33 U	33 U
Aroclor-1232		33 U	33 U
Aroclor-1242		33 U	33 U
Aroclor-1248		33 U	33 U
Aroclor-1254		33 U	33 U
Aroclor-1260		33 U	114 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

11/31/05

11/22/05

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Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 11/17/05 12:54

RFW Batch Number: 0511L671 Client: TNUHANFORD RC-030 K0096 Work Order: 11343606001 Page: 1

	Cust ID:	J10FJ2	J10FJ2	J10FJ2	J10FH7	J10FH8	J10FH9
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	4.00	4.00	4.00	10.0	10.0	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	89 %	100 %	80 %	81 %	81 %	99 %
	Decachlorobiphenyl	88 %	94 %	86 %	81 %	87 %	97 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.4 U	117 %	99 %	4.1 U	3.8 U	1.4 U
gamma-BHC (Lindane)		1.4 U	123 %	106 %	4.1 U	3.8 U	1.4 U
Beta-BHC		1.4 U	117 %	104 %	4.1 U	3.8 U	1.4 U
Heptachlor		1.4 U	117 %	109 %	4.1 U	3.8 U	1.4 U
Delta-BHC		1.4 U	112 %	105 %	4.1 U	3.8 U	1.4 U
Aldrin		1.4 U	112 %	101 %	4.1 U	3.8 U	1.4 U
Heptachlor epoxide		1.4 U	117 %	108 %	4.1 U	3.8 U	1.4 U
gamma-Chlordane		1.4 U	111 %	104 %	4.1 U	3.8 U	1.4 U
Endosulfan I		1.4 U	119 %	111 %	4.1 U	3.8 U	1.4 U
alpha-Chlordane		1.4 U	116 %	109 %	4.1 U	3.8 U	1.4 U
4,4'-DDE		1.2 J	127 * %	115 %	6.6 J	6.5 J	1.4 U
Dieldrin		1.4 U	125 %	111 %	3.7 J	3.2 J	1.4 U
Endrin		1.4 U	127 %	113 %	4.1 U	3.8 U	1.4 U
4,4'-DDD		1.4 U	148 * %	136 * %	4.1 U	3.8 U	1.4 U
Endosulfan II		1.4 U	129 * %	118 %	7.6 J	5.6 J	1.4 U
4,4'-DDT		1.4 U	122 %	111 %	4.1 U	3.8 U	1.4 U
Endrin aldehyde		1.4 U	98 %	95 %	4.1 U	3.8 U	1.4 U
Endosulfan sulfate		1.4 U	112 %	103 %	4.1 U	6.9 .I	1.4 U
Methoxychlor		1.4 U	122 %	112 %	10	3.8 U	1.4 U
Endrin ketone		1.4 U	106 %	98 %	4.1 U	3.8 U	1.4 U
Toxaphene		14 U J	14 U	14 U	41 U J	38 U J	14 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

11/31/05

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Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List — Report Date: 11/17/05 12:54

RFW Batch Number: 0511L671 — Client: TNUHANFORD RC-030 K0096 — Work Order: 11343606001 — Page: 2

	Cust ID:	PBLKWF	PBLKWF BS
Sample Information	RFW#:	05LE0892-MB1	05LE0892-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	71	%	81	%	
	Decachlorobiphenyl	73	%	76	%	
			fl		fl	
Alpha-BHC		0.33	U	107	%	
gamma-BHC (Lindane)		0.33	U	104	%	
Beta-BHC		0.33	U	101	%	
Heptachlor		0.33	U	102	%	
Delta-BHC		0.33	U	110	%	
Aldrin		0.33	U	86	%	
Heptachlor epoxide		0.33	U	97	%	
gamma-Chlordane		0.33	U	99	%	
Endosulfan I		0.33	U	98	%	
alpha-Chlordane		0.33	U	98	%	
4,4'-DDE		0.33	U	106	%	
Dieldrin		0.33	U	101	%	
Endrin		0.33	U	101	%	
4,4'-DDD		0.33	U	136 *	%	
Endosulfan II		0.33	U	116	%	
4,4'-DDT		0.33	U	104	%	
Endrin aldehyde		0.33	U	90	%	
Endosulfan sulfate		0.33	U	93	%	
Methoxychlor		0.33	U	96	%	
Endrin ketone		0.33	U	87	%	
Toxaphene		3.3	U	3.3	U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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11/30/05

Lionville Laboratory, Inc.
Herbicides, Special List
Report Date: 11/28/05 13:59

RFW Batch Number: 0511L671 Client: TNUHANFORD RC-030 K0096 Work Order: 11343606001 Page: 1

	Cust ID:	J10FJ2	J10FJ2	J10FJ2	PBLKWJ	PBLKWJ BS
Sample Information	RFW#:	001	001 MS	001 MSD	05LE0904-MB1	05LE0904-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate:	DCAA	128 %	98 %	83 %	68 %	48 %
Dalapon		180 U	99 %	83 %	170 U	32 %
Dicamba		72 U	72 %	59 %	67 U	32 %
Dichloroprop		180 U	106 %	93 %	170 U	45 %
2,4-D		47	89 %	73 %	33 U	41 %
2,4,5-TP (Silvex)		18 U	102 %	93 %	17 U	51 %
2,4,5-T		18 U	105 %	90 %	17 U	46 %
2,4-DB		180 U	112 %	146 %	170 U	63 %
Dinoseb		18 U	120 %	111 %	17 U	103 %
Pentachlorophenol		14 U	130 %	120 %	13 U	54 %

0000015

1/31/06

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L671
SDG/SAF # K0096/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

PCB

Four (4) solid samples were collected on 11-07-2005.

The samples and their associated QC samples were extracted on 11-11-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-16-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. The samples were extracted and analyzed within required holding time.
3. Samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/22/05
Date

kim\r:\group\data\pest\tnu hanford\0511-671.pcbs
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C530

Initiator: DR
Date: 11/21/05
Client: QA

Batch: ICAL
Samples:
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix:
Prep Batch:

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary) PCB 1660 ICAL ANALYZED 11/14/05 WAS INADVERTANTLY DONE USING A CURVE THAT EXPIRED ON 11/11/05 HOWEVER THE ICV USED TO CHECK CALIBRATIONS MET CRITERIA VALIDATING EXPIRED CURVE. PCB STDS ARE GENERALLY STABLE. NO DATA IMPACTED SIGNIFICANTLY COPY OF SDR WILL BE KEPT WITH STDS.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: _____

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L671
SDG/SAF # K0096/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

CHLORINATED PESTICIDES

Four (4) solid samples were collected on 11-07-2005.

The samples and their associated QC samples were extracted on 11-11-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. The required holding time for extraction and analysis was met.
3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. One (1) of twenty (20) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Four (4) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. All samples required 4 to 10-fold dilution due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.
9. The initial calibrations associated with this data set were within acceptance criteria.
10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria with the exception of CCV analyzed on 11-15-2005 on RTX-CLP column. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
11. The Endrin standard analyzed prior to sample extracts were within acceptance criteria with the exception of Endrin Standard analyzed on 11-14-2005 at 09:21 A.M. on the RTX-CLP2 column. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
12. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/22/05
Date

som\r:\group\data\pest\tnu hanford\0511-671.pst

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 05GC521

Initiator: RE
Date: 11/17/05
Client: TNO

Batch: 0511671
Samples:
Method: SW846/MCAWW/CLP/

Parameter: 8081A
Matrix: SOLID
Prep Batch: 05E0884792
TE DC 11/17/05

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary) ① Recovery for DDD a bit high RS. ② several MS/MSD recoveries out slightly high. Narrate?

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Narrate

4. Project Manager Instructions...signature/date: 11/21/05
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 11/21/05 Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stoke/Johnson	2	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 05EC523

Initiator: TERRE 11/7/05 OETTED
Date: 11/7/05
Client: TNO

Batch: 05IL671,674,675,609
Samples: 2-4, All, All, All
Method: SW846/MCAWW/CLP/

Parameter: Cd8H
Matrix: Solid
Prep Batch: 05LE0884, 05LE08

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary) CCV'S PRIOR TO SAMPLE ANALYSIS WERE INCREASED ON RTX CLP COLUMN. USED ONLY FOR CONFIRMATION PURPOSES. DOES NOT IMPAIR ABILITY TO DETECT. narrate

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

narrate

4. Project Manager Instructions...signature/date: 11/21/05
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 11/21/05 Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
I	X Project Mgr: Stone/Johnson	2	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C519

Initiator: DR
Date: 11/7/05
Client: TNR

Batch: 051111642, 643, 671
Samples: all, 9115, 994
Method: SW846/MCAWW/CLP/

Parameter: 624RT
Matrix: SOLID
Prep Batch: 051E0884

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary) Analysis Date 11/4/05 EVAL @ 09:21:02 - Breakdown exceeded 15% criteria slightly on RTX4P2 (15.8) the preceding CCV and spikes were acceptable. See Endrin and its breakdown products. The EVAL after next block also met criteria. NO Endrin or by products in samples. Narrate? no significant impact.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: _____ 11/18/05
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ 12/22/05 Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
J	X Project Mgr: Stone/Johnson	2	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L671
SDG/SAF # K0096/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

HERBICIDE

One (1) solid sample was collected on 11-07-2005.

The sample and its associated QC samples were extracted on 11-15-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-18-2005. The extraction and analysis procedures were based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/28/05
Date

som\r:\group\data\herb\tnu\0511-671.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 1 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9		SAF No. RC-030		
Ice Chest No. AFS-04-120	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060108		Bill of Lading/Air Bill No. See OSAC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

0000024

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	None	None	Cool/4C	Cool 4C	Cool 4C	Cool 4C				
				Type of Container	G/P	G/P	aG	G	aG	G				
				No. of Container(s)		1	1	1	1	1				
				Volume	500mL	120mL	60mL	60mL	60mL	250mL				
					See item (1) in Special Instructions	See item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; [redacted]	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
J10FH7	OTHER SOLID	11/7/05	0820		X	X		X						
J10FH8	OTHER SOLID	11/7/05	0820		X	X		X						
J10FH9	OTHER SOLID	11/7/05	0930		X	X		X						
~~J10FJ0~~	~~OTHER SOLID~~	NO 11/7/05												
~~J10FJ1~~	~~OTHER SOLID~~	11/7/05												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] m Stankovich	11/7/05 1330	m 3728/2C	11/7/05 1330
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Ref 2C	11/8/05 1000	[signature]	11/8/05 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	11/8/05 1000	Fed EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed EX	11/9/05 0935	[signature]	11-9-05 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium

(2) ICP Metals - 6010A (SW-846) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

Matrix *
S=Soil
SB=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 2 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9		SAF No. RC-030-		
Ice Chest No. ERC-01-027	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060109		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

SAMPLE ANALYSIS												
Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G	G/P	aG	G	aG	G						
No. of Container(s)		1	1		1	1						
Volume	125mL	120mL	60mL	60mL	60mL	250mL						
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - SPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1						
Sample No.	Matrix *	Sample Date	Sample Time									
J10FJ2	OTHER SOLID	11/7/05	1200	X	X	X		X	X			
~~J10FJ3~~	~~OTHER SOLID~~	BH 11/7/05										

S20000025

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BILL HUDSON	11/7/05 1700	3728 BLDG 2B	1700 11/7/05
3728 Rm 2B	11/8/05 1230		11/8/05 1230
	11/8/05 1230	FedEx	
FedEx	11/9/05 0935		11/9/05 0935

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 – Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

(2) ICP Metals - 6010A (SW-846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-50;9			DATA PACKAGE: K0096		
VALIDATOR: TCI		LAB: LLI		DATE: 1/20/01	
			SDG: K0096		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	8151A	
SAMPLES/MATRIX					
J10FJ2	J10FH7	J10FH8	J10FH9		
			other solid		

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... (Yes) No N/A
Surrogate recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes (No) N/A
Comments: MS 4,4-DDE - J all detect no PAS
MS Endosulfan II - J all detect
no toxaphene ~~MS/MSD~~ MS/MSD/LCS - J all

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A

Duplicate results acceptable? ..... (Yes) No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... Yes No (N/A)

Field split RPD values acceptable? ..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: no except MS/MSD -Jeff

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No (N/A)

Positive results resolved acceptably? ..... Yes No (N/A)

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A

Sample holding times acceptable? ..... (Yes) No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	N/A
Compound quantitation acceptable? (Levels D, E)	Yes	No	N/A
Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: Dalapon, dichloroprop + 2,4-DB over

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Date: 2 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite is 100-D-50:9
Subject: Wet Chemistry - Data Package No. K0096-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0096 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10FJ2	11/7/05	Solid	C	See note 1

1 – Total petroleum hydrocarbons by 9071.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for TPH.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All other holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J".

Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity

(concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package K0096 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0096	REVIEWER: TLI	PROJECT: 100-D-50:9	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD			
Lab: LLI	SDG: K0096		
Sample Number		J10FJ2	
Remarks			
Sample Date		11/7/05	
Wet Chemistry	RQL	Result	Q
Total Petroleum Hydrocarbons	5	144	U

600009

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10FJ2	% Solids	92.0		%	0.01	1.0
		Petroleum Hydrocarbons	144	U	MG/KG	144	1.0
-002	J10FH7	% Solids	82.0		%	0.01	1.0
-003	J10FH8	% Solids	86.8		%	0.01	1.0
-004	J10FH9	% Solids	95.7		%	0.01	1.0

11/31/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030 K0098
LVL#: 0511L671

W.O.#: 11343-606-001-9999-00
Date Received: 11-09-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 solid samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blank for Petroleum Hydrocarbons (PHC) was within the method criteria.

6. The Laboratory Control Sample (LCS) for PHC was within the laboratory control limits.

7. The matrix spike recovery for PHC was within the 75-125% control limits.

8. The replicate analysis for PHC was within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/21/05
Date

njp\il1-+671

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-026	Page 2 of 2
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:9		SAF No. RC-030		
Ice Chest No. ERL-01-027	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060109		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

00013

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G	G/P	aG	G	aG	G				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	60mL	60mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time							
J10FJ2	OTHER SOLID	11/7/05	1200	X	X		X	X		
~~J10FJ3~~	~~OTHER SOLID~~	BH 11/7/05								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BILL HUDSON	11/7/05 1700	3728 BLDG #2B	1700 11/7/05
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Rm 2B	11/8/05 1230	D.S. Kessner	11/8/05 1230
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D.S. Kessner	11/8/05 1230	FedEx	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	11/9/05 0935		11/9/05 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium
(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-5019			DATA PACKAGE: K0096		
VALIDATOR: TLI		LAB: LLI		DATE: 1/20/06	
			SDG: K0096		

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX
J10FJ2
SOLD

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

_____

_____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... (Yes) No N/A
Spike recoveries acceptable? ..... (Yes) No N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
Spike standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes (No) N/A
Comments:
no DUS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No (N/A)

Detection limits meet RDL? ..... Yes (No) N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: All ones

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LHC074-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT		SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J10FJ2	Petroleum Hydrocarbons	726	132		607	97.8	1.0
BLANK10	05LHC074-MB1	Petroleum Hydrocarbons	628	133	u	560	112.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0096 LVL LOT #: 0511L671

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J10FJ2	Petroleum Hydrocarbons	144 u	145 u	NC	1.0